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ABSTRACT

The objective of this investigation was to collect data on the needs of information users which could serve as a basis for the design of information systems in the social sciences. Research habits of social scientists were explored to identify research procedures and problems of research including circumstantial and environmental variables. A profile of how social scientists conduct their research concludes this report. (CH)

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Investigation into Information Requirements of the Social Sciences

Research Report no. 5

THE RESEARCH PROCEDURES OF SOCIAL SCIENTISTS

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November, 1971

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FOREWORD

This is the last of the series of Research Reports produced as a result of the Investigation into Information Requirements of the Social Sciences (INFROSS), carried out at the University of Bath with the support of OSTI from 1968 to 1970. The objective of the Investigation was to collect data on the needs of users which could serve as a basis for the design of information systems in the social sciences. The inquiry included an attempt to analyse the research procedures of social scientists, but because a different technique had to be used to analyse the answers to this particular question from that used for the rest of the questionnaire replies, the analysis was left to a later stage, and in the event was carried out in the first year of the research project that followed INFROSS - Design of Information Systems in the Social Sciences (DISISS). The work has now been done by Barbara Skelton, a member of the DISISS project, who is mainly responsible for the drafting of this Report.

Maurice B. Line
December 1971

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1. INTRODUCTION

When designing information systems to meet the needs of individuals, the basic question is 'what information, in what form, supplied with what speed, would further the particular activity in which the individual is involved?' Merely asking people what information they need can produce answers that are at best partial and at worst misleading, since some information is recognized as relevant only when it is provided. It is important therefore to try and find out what researchers are actually doing and the way they go about it.

Much has been written on the nature and methods of social science research but little is known about how research in the social sciences is actually carried out; model patterns have been developed (how to do social science research),* but there are few actual descriptions by social scientists of how they conduct their research ('how I did social science research'). There is a familiar paradigm for the conduct of research in science: hypothesis formulation, literature review, experimental design, data collection, analysis of data, drawing of conclusions. There is little evidence to show that even scientists follow the procedure at all precisely (and some evidence to show that they do not). This report aims to identify and describe the procedures involved in social science research, the methods researchers use, and the basic stages of research, emphasizing where possible the chronological sequence.

Ideally the research process would be explored by detailed study and observation of a number of individuals over the whole period of a research project. This would be difficult to do in any circumstances, and was certainly not possible within the three year Investigation into Information Requirements of the Social Sciences (INFROSS), carried out at the University of Bath and Newcastle-upon-Tyne. The main part of INFROSS was a survey, by mail questionnaire, of a two-in-seven national

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*e.g. WAKEFORD, J. The strategy of social enquiry: a new programme on methods and measurement for the student of sociology. London, Macmillan, 1968; NOLTINGK, B.E. The art of research: a guide for the graduate. Amsterdam, Elsevier, 1965; SCHOFIELD, M. Social research. London, Heinemann, 1959, Part 3; GOODE, W.J. and HATT, P.K. Methods in social research. New York, McGraw, 1952, Chapters 5-8.

sample of social science researchers: the results of this survey are reported in INFROSS Research Report no. 1. Most of the questionnaire consisted, necessarily, of direct or indirect questions on information uses and needs, but one question - Q.9 was aimed specifically at obtaining information on the research process.

Q.9 was worded as follows:

> How have you actually set out your research? If you can state the various stages chronologically it will be helpful. (See samples on next two pages).

It was followed by three examples (disguised versions of actual projects discussed during preliminary interviews) as guides to what was required. This report is based mainly on the replies to this question, but data from replies to several other questions are also included. Despite the examples that were given in Q.9, the question was answered in such unsystematic ways that analysis using MVC program was not possible, and the data was not therefore reported in INFROSS Research Report no. 1. Q.9 was answered by 671 respondents; of these answers, 215 were used in content analysis and the remaining answers were scanned. It was felt that analysis in depth of 215 answers was sufficient to provide data on the basic stages of research and that detailed analysis of more would shed little extra light. The fact that the answers were extremely varied made it difficult to categorise every item; each new element that did not fall into the basic categories was noted during scanning.

The answers received varied from detailed description of each step in the research to the bare statement "thinking, reading and writing". Because it was an open-ended question, respondents who did not mention certain stages cannot be assumed to have omitted them. A few respondents who did not answer the question stated that their research procedure was too complex to split into stages; other researchers only gave a few stages (the ones they had already done) and could not go further than the present, stating that the next stages had not yet been worked out. Some statistical tables were constructed to help analyze the answers to Q.9; they are not reproduced here, since they could appear to give a spurious validity to the results. This report is based on these tables but is also necessarily based upon impressions gained from reading the answers to Q.9.

2. BASIC STAGES OF RESEARCH PROCEDURE

2.1 Initiation of research

Research projects had a variety of origins. Some researchers could state when and how their ideas for research developed, but in the majority of cases the origin of the research was less definite. A few researchers said that they had been aware of particular problems or ideas for several years, and active research commenced only when it became possible. Factors allowing research to begin included having time available, obtaining a grant, or merely desiring to do something positive about certain ideas. One researcher (involved in compiling a dictionary) stated that he was motivated to research when he became aware of gaps in previous work. Another stated that his experience and observation in a particular field had made him aware of certain needs which at the moment were not being satisfied, and another disagreed violently with the published literature and wished to put his own ideas forward. One researcher mentioned that he came across a reference to a book published in 1899 describing a neglected visual phenomenon; he managed to obtain a copy of the book and repeated the described observation, on the basis of which he began further research on that particular topic. The origins of projects for many researchers appear to lie largely in their own curiosity and awareness.

A few researchers mentioned teaching as stimulating research; seminars, informal discussion with students or preparation of teaching material were the main means by which ideas developed. Research projects in independent organizations or government departments tended to be initiated at the request of a client or a commissioning body, or to provide information required by a parent ministry or department; the information needs of these researchers exhibited a number of differences from those of other researchers (see INFROSS Research Reports nos. 1 & 2). Those doing research for a higher degree mostly acquired interest in a topic while doing a first degree, or at the suggestion of a supervisor.

2.2 Hypothesis formulation

Despite the various ways in which research was initiated, most respondents relied heavily on the literature, and to a much lesser extent on others working in the same field, for general and theoretical formulations on which to base the research. Many researchers carried out a period of wide reading, on the basis of which they gradually defined their research area and the problems they wished to investigate. Defining the conceptual framework of the research appeared to be a rather nebulous but important part of the research process; at this stage particular hypotheses and theories were examined in depth. Respondents stated that time was spent defining 'ideal limits' and 'optimum systems'. When the area of research had been decided, researchers stated that they often referred to the literature again to examine areas where detailed analysis was necessary.

2.3 Data collection

2.3.1 Methodology

Some researchers mentioned a stage in their research that consisted of seeking an appropriate method of investigation. This involved using the literature as well as seeking advice from others. Researchers spent time familiarizing themselves with methods that had been used in previous work, evaluating them in terms of usefulness for their own research and then applying them where relevant. This was especially so in psychological research, where experimentation is an important part of research.

A few researchers mentioned that once they had decided on a method they had to familiarize themselves with special techniques that might be required. One researcher stated that he revised his knowledge of statistical techniques and computer programming. Some of those who were doing research on or in a foreign country stated that they had to learn the language; Russian, and also African languages and dialects, seemed to create most problems. On the whole, however, few researchers stated that they used methods new to them, and little time was devoted to learning new techniques.

2.3.2 The process of data collection

The main methods of data collection were postal questionnaires, structured and unstructured interviews, observation, experiments, case studies, and to a lesser extent visits to foreign countries. Often more than one method was used. Most researchers carried out pilot studies, as a result of which modifications were made for the main study. Researchers in psychology tended to devote much time to designing suitable apparatus to be used in their experiments. They made greater use of audio-visual aids (film media, tape recordings and closed circuit television) than researchers in other subjects. Researchers in geography and history collected much of their data through field work; this included the use of land surveying techniques and actual physical collection of items from the field. One researcher, doing a study of medieval rural depopulation in S.E. Warwickshire, carried out systematic field work on lost village sites which involved surveying earthworks in order to construct plans representing, as far as possible, the original buildings, and collecting ceramics and other remains from ploughed sites for dating. Another researcher said that he was able only to carry out a rough field survey due to the fact that building work was being started on the site. Researchers investigating topics in foreign countries tended to spend some time there, for it was only by personal involvement that data could be collected, especially if the research was concerned with sociology or anthropology. For example, a researcher studying the social organization of a Spanish village spent a considerable part of his research time actually in Spain. Similarly a researcher concerned with Arab nomads spent some time observing and speaking to them. Researchers who needed information that was not published or available in any country apart from that with which the research was concerned obviously had to visit the country. One researcher was investigating particular aspects of French history and had to visit France for access to the personal collections he needed to consult.

Much time was devoted to making contact with people needed for cooperation with a survey, and to some researchers this proved to be a major problem. For instance, one researcher in education lamented the time he spent contacting headmasters who would be willing for their school to participate in a survey, while another researcher mentioned that he had spent time gaining landowners' permission to study certain land features.

Researchers in historical subjects tended to make great use of archival collections, access to which was often difficult. Historians collected data mainly direct from documents; several mentioned photocopying as their main means of data collection and this sometimes gave rise to problems of copyright. Researchers using a sample (usually of people) had to spend a fair amount of time drawing up a sampling frame, since on this could depend much of the survey's validity. One researcher, investigating drug-taking, mentioned the difficulty of contacting persons willing to take part in his survey, because of the illegal nature of drug-taking.

Planning and organizing the collection of data, perhaps as much as or even more than the data collection itself, form a particularly important and time-consuming task for most researchers.

2.4 Documentary sources for research

Researchers use a variety of documentary sources. Some researchers mentioned merely that they sought informatio. from published and unpublished sources, while others listed in great detail the types of sources they used: these included archives, memoirs, private collections, diaries, speeches, Hansard, newspapers, air photographs, and architectural drawings and plans. Statistical data relating to employment, housing, etc. tended to be collected from government departments and local authorities. Use of Parliamentary papers, census data, Commonwealth Relations Office records, Colonial Office records, etc., was extremely frequent, and to it was often added use of records of industrial and commercial organizations.

Depending on the subject and nature of the research, data could be collected from files and records of worldwide organizations, and from very local sources such as the records of corner shops. Parish records were important sources for some research on local topics.

2.5 Data analysis

Q. 10 in the INFROSS questionnaire asked respondents to outline briefly any special methodology they used in their research. Most of the answers related to methods they used for data analysis. The statistical techniques used included factor analysis, cost-benefit analysis, multiple

correlation, regression analysis, principal component analysis, numerical analysis and content analysis. (Some of these could hardly be called 'special', but the term 'special' is open to various interpretations.) As an aid to analysis, model building was mentioned; economists particularly referred to econometric models, while simulation models were used by other researchers. Many researchers made use of a computer to aid them in their analysis. Some geographers mentioned the use of cartographic techniques, while a few historians stated that they did not use any mathematical or statistical techniques and relied mainly on descriptive statements.

A large proportion of researchers stated that they used no special techniques for their research. This may seem a little surprising, but is again probably due partly to their interpretation of 'special'. The number of special techniques available is limited, and some were probably considered by their users so commonplace as not to be worth mentioning. That interest in methods of investigation suitable for the social sciences is increasing rapidly is shown by the growing number of monographs on the topic.

2.6 Reporting research

An essential part of all completed research is reporting. Most respondents mentioned this as a particular stage of their research, but the exact way in which they went about it did vary a little. The majority merely stated that they intended to write up the research, a few mentioned the number of drafts they did before the final draft (which varied between one and four), while others mentioned that they did not write up their work at the end of the project but as each stage of the research was completed. Only two researchers stated that writing up the research was an integral part of the research; they wrote papers for publication as their research progressed, feedback from the papers helped to further ideas for the next stages of research, which were subsequently written up in another paper, and so on.

2.7 The role of the literature in research

Of the 215 questionnaires that were analysed in depth, 73 per cent mentioned some use of literature at some stage. The importance of using

the literature is further emphasized by the fact that 75 per cent of those who mentioned the use of literature did so as a first step in their research. They used the literature to help conceptualize their field of research and to find out exactly what previous work had been done in the field. Six per cent of respondents tended to use the literature as a second step in their research, after first consulting colleagues and those having interest in a particular field. The remainder of respondents either used literature for background information only, or referred to the literature throughout the whole duration of the project, and therefore did not consider the use of literature as a specific stage in their research.

Of those who considered the use of literature to form a definite stage in their research, the majority stated that they first carried out a literature search. The efficiency and magnitude of this operation are difficult to assess; some stated that they performed a 'systematic search', while others sought reference to 'both published and unpublished material', including some in private collections. Some said that they carried out a 'literature search' but gave no indication of the size of the task, some performed an 'unsystematic search', while others merely engaged in 'reading'. One respondent mentioned that he used three libraries for his literature search, and a few said that they spent the first few months of the project doing 'library research'.

A few respondents mentioned that after conducting a literature search they constructed their own bibliography. In the first stage of research, use of the literature often tended to be very broad, and then, after problems in the research had been defined, a more detailed literature search followed in particular aspects of the problem. Some researchers tended to refer back to the literature towards the end of their research, either to compare results with other studies or to try and fill in any gaps or resolve any remaining problems. Historical researchers referred to the literature far more than other researchers, but most of this reference was data collection rather than literature searching in the narrower sense, since documents are the main raw data of research for most historians.

2.8 The role of discussion in research

Only 5 per cent of respondents said that their first stage of research was to hold discussions with others working in the same field, and 8 per cent mentioned discussion as a second stage of their research. Respondents were usually more ready to discuss their research problems after they had first referred to the literature. When discussion did take place it was with other members of the research team, with persons working in the same field, with senior colleagues (or in the case of those reading for a higher degree, supervisors), or with clients and commissioning bodies. A few researchers mentioned discussion in seminars or following lectures.

The fact that discussion was not specifically mentioned by many researchers as a specific stage may be a little misleading, as it is likely to be a continuous process, contributing in various ways at all stages, and its importance may not be recognised when trying to recall the stages of research in a chronological order. From other parts of the INFROSS survey (see Research Report no.1, section 3.3), it was found that the vast majority of respondents (90 per cent) discussed work with colleagues in their own institution, and 93 per cent had some form of communication with persons in external institutions. Informal communication was also used for obtaining relevant references and keeping up to date with current research. As discussion may be considered a continuous process, it may have been built in to some researchers' answers; those who gave answers of 'thinking, reading, writing', and those who complained that their research procedure was too complex to allow for a breakdown into chronological stages, may have been highly involved in a constant flow of informal communication that might influence their research procedure and account for the complexity and 'non-structure' of their research.

It was also found (see INFROSS Research Report no. 1, section 3.3.1) that there was no correlation between the amount of discussion with colleagues (within the same institution and in other institutions) and factors such as age or status of researchers, length of time they had been in the institution, research experience, and whether they combined research with teaching or were engaged in full-time research.

3. PROBLEMS OF RESEARCH

During any research project problems are bound to arise; the type of problems dealt with here are not those that are concerned with the nature of the research, but those that are a function of the organization and procedures of the research. A brief analysis of such problems will indicate the areas that researchers must consider more closely when beginning to set about their research. The type of problem and its extent will exert a considerable influence on research procedures; the stages of research may have to be completely replanned or the time schedules may be disrupted and certain stages may have to be delayed until suitable solutions are found. Some of the problems can be alleviated if there is adequate planning beforehand, while others cannot be foreseen.

In reply to Q.9 some researchers mentioned problems they met in the course of their research, although they were not asked specifically to do so. (The sample answers included problem areas.) Q.57a in the INFROSS questionnaire asked respondents directly about their information problems; the answers are analysed in INFROSS Research Report no. 1, section 3.2.22. There is considerable overlap of problems mentioned in answers to Q.9 and Q.57a. The main problem areas that arose in Q.9 were concerned with accessibility to data sources.

Gaining access to literature sources and indeed locating the correct sources proved to be a major problem for some researchers. One respondent complained that data collection was made difficult by the literature being widely scattered over a large variety of documents - after three years he was still discovering new sources. A few researchers complained of too little data on some topics, especially those concerned with developing countries. Other problem areas mentioned included the obtaining of data from professions sensitive to enquiry, the poor organization of archives and the difficulty of gaining access to them, and obtaining data from government departments.

Once access has been gained to data sources problems still arose. Some researchers unexpectedly found that data they had collected from various sources were not compatible and time had to be spent reworking statistics on a common basis before any analysis of the data could start.

It is surprising that no researchers mentioned the low response rate that is usually characteristic of questionnaire investigations. Perhaps researchers using this method have come to accept a poor response; not one researcher mentioned the time-consuming task of following up non-respondents.

Unforeseen problems causing disruption in the research procedure may be considered to include the lack of suitable facilities for research. One researcher mentioned his noisy, overcrowded working conditions, his poor library facilities and the expense of photocopying. A researcher in historical geography described how his fieldwork was hampered by the fact that he did not own a car and had to rely on infrequent country bus services for journeys to sites. Some researchers who had to make visits to foreign countries mentioned that their research was restricted by lack of travel funds. When making a visit to a country they often had to conduct their work in an extreme hurry because of the short time they were able to be there. For one researcher, the problem was increased when the rainy season held up field work.

Finally, one respondent considered that research itself constituted one big problem. He claimed to have no procedure: an ever-changing number of staff worked with him, seminars which he had to hold completely disrupted any time schedules, travel difficulties and appalling library lending facilities all contributed to an erratic research procedure.

4. OTHER INFLUENCES ON RESEARCH PROCEDURE

From analysis of Q.9 the basic stages of research appear to be:

(i) procedures leading up to initiation of research;
(ii) hypothesis formulation;
(iii) planning the method of investigation and seeking cooperation;
(iv) data collection;
(v) data analysis;
(vi) writing up.

Most researchers in the social sciences order their work to include these stages, but some researchers give much attention to certain stages and little to others. Often there is much overlapping between stages, or indeed some researchers may carry out several stages of research simultaneously. It now remains to be seen if there is any correlation between the stages of research and personal characteristics of the researcher.

4.1 Research experience

It might be expected that the more experienced researcher would organize his work more efficiently than one with little experience. Researchers with many years' experience in a particular field ought to be more familiar with data sources and to have established many personal contacts that would aid them. There was however no apparent difference in the way research was conducted and the experience and age of the researcher. A senior researcher would be more aware of the information problems than a person new to research, but if research is conducted on a variety of topics, each topic creates its own problems. In answer to Q.9 researchers were asked to refer specifically to one research project. Hence the apparent similarity in research organization despite variations in research experience. In some cases, it appeared the more senior researchers had less time available to fill in the questionnaire, and therefore gave less detail and structure to Q.9 than younger researchers. Some researchers were directors of several projects, and claimed that they had too many involvements and that their procedure was too complex to break down into stages.

4.2 Hours per week spent on research

A further question in the questionnaire (Q.7) asked respondents to indicate the number of hours per week they spent on research. The replies to this were analysed in INFROSS Research Report no. 1, section 3.1.4. Those respondents who organized their work according to the terms and vacations of academic institutions showed considerable variation in the number of hours worked and, as expected, researchers tended to work more hours in the vacation. But there was also a slight tendency for those researchers who worked long hours in term to work long hours in the vacation. The number of hours varied from less than one hour per week to over sixty hours. In some cases respondents who spent only a few hours per week on a particular research project tended to be directing several projects and had many other interests at a managerial level; they were not involved in day to day research activities.

Several researchers, however, could not give a figure for the number of hours they worked stating that they worked extremely irregular routines due to their academic, business or other commitments; one researcher gave the example that when her children were ill her research came to a standstill.

4.3 Time limit for research

Analysis of Q.8a (see INFROSS Research Report no. 1, section 3.1.4) showed that 45 per cent of respondents had no time limit for completion of their research. However, the way respondents carried out their research did not seem to vary, whether they had a time limit to meet or not. It might have been expected that those researchers who had a time limit imposed upon them would structure their research procedure more tightly. There was a tendency for those researchers who spent only a few hours per week on their research not to have a time limit for completion of their research. They also tended to be the ones that were not getting financial support from a granting body, but were merely doing research on a topic that interested them, and were carrying it out at their own speed.

Those researchers who had time limits imposed upon them were mostly committed to complete their research in one, two or three years. Some projects did extend to four, five and six years; the granting bodies in these cases were commissioning bodies, e.g. Ministry of Overseas Development, or ordinary granting bodies. For most researchers the time limit for completion of projects was imposed either by a granting body or by the university itself. In this last category were included those respondents doing research for higher degrees. A few researchers had time limits imposed on them by publishers.

4.4 Number of persons working on research project

The number of persons working on a project did not appear to alter, to any degree, the organization of the research. Many of the researchers were conducting research alone, but when teams were involved they were mostly composed of one, two or three persons. Only large independent research organizations employed larger numbers of people - anything up

to ten, especially when the time limit for completion of the project was more than three years. Some researchers working alone tended to employ student assistance on a part-time basis or for a particular phase of the research. Students were sometimes employed to help organize the distribution of postal questionnaires and to perform other routine or clerical work.

4.5 Environment of research

The environment or institution in which the researcher carried out his work did not affect to any great extent the way he went about his work. A few researchers complained of noisy working conditions, and that other commitments such as teaching disrupted their research procedure. These factors related to the job functions and local working conditions rather than the employing institution, but it is common for certain functions and conditions to be associated with certain environments.

4.6 Conclusions

Research procedure did not appear to vary to any great extent with age and experience of researcher, the number of hours per week spent on research, the time limit of the research and the environment of research. Researchers with much experience, employing several research assistants and conducting a project to last three or four years, did not appear to differ in any considerable way in the manner they conducted their research from the young researcher working alone on perhaps a much shorter project.

5.0 GENERALIZED PROFILE OF HOW SOCIAL SCIENTISTS CONDUCT THEIR RESEARCH

5.1 Stages and elements in the research procedure

Before formal initiation of a research project a researcher may have undertaken several procedures, though he may not have done so as

a conscious and deliberate stage in his research. He may have purposely engaged himself in conversations or reading in the hope of seeking new ideas, or he may have developed ideas for research merely as a result of casual conversation, or while seeking references to other topics. Often there is no clear way of knowing exactly when and how an idea developed. Q.54 in the INFROSS survey asked respondents specifically about their stimulus for research; the replies, which are analysed in INFROSS Research Report No. 1, section 3.2.18, show that respondents rated their own research and reading as the most valuable stimuli.

From replies to Q.9 it appears that once a definite idea has taken shape, the next stage may be the formulation of a research project centering on the idea. Preliminary enquiries into the feasibility of carrying out such research would then have to take place. This may involve seeking an appropriate sponsor for the project if financial aid is required; this may largely depend on whether the research is going to be carried out merely as a spare time interest, or whether it is to be organized on a more formal basis, forming a researcher's main work. At this stage also, preliminary reading and discussion would be necessary to explore possible methodologies for research. Certain hypotheses may be formulated which will be tested during the research.

Once all these activities are under way, formal initiation of the research is possible, except for those researchers seeking financial support for their research. It will be necessary for them to make a formal application to a granting body, and in doing so they must assess the number of staff needed to work on the project and the time period for completion of the research. They must also plan their research procedure much further ahead than free-lance researchers, as granting bodies require detailed programmes of work before making grants. The resources available are in many cases the deciding factor in determining the specific hypothesis to be investigated and the methodology to be used.

Planning the method of investigation and contacting people who will co-operate can be a very time-consuming task, as has already been described in section 2.3. The drawing up of sampling frames, the design of a survey, and finally the testing and refining of the methodology are extremely important. Discussion and reading may be important factors at this stage. The use of statistical techniques and computer programs for analysis of data may also be looked into at this stage.

When the methods have been decided upon, the actual data collection may begin. This may at first be considered a fairly straightforward task, but all types of unforeseen elements may appear, e.g. more or less data may be available than was previously thought, so that the time schedules for the rest of the project may have to be altered. If the response to a questionnaire survey is particularly low, the following up of respondents may be desirable to ensure that enough data is available for valid results.

Data analysis may be a stage where new hypotheses may be stimulated, and the original ones proved or disproved. Discussion of results with colleagues may feature as an important element. Also, reference to the literature is important here - for, as described in section 2.5, researchers may check their results with past studies or indeed try to find answers to any problems that still remain unsolved.

A final stage of the research procedure may be considered to be the writing up of the research. The actual way it is written up will depend upon whether it is a report to a granting body, intended for a publisher, or a thesis for a higher degree. The length of time devoted to this stage depends largely on the number of drafts before the final report is produced; discussion with colleagues may be important. The research procedure may be considered to continue further, and to include the dissemination of results of research. This may involve the presentation of results at a conference and publication of results in the form of monographs or periodical articles.

Discussion and reading are continuous activities throughout the whole research procedure. Discussion and formal meetings may take place at any level - from involvement with immediate colleagues to contact at national and international levels. Presentation of reports of research in progress may take place at any stage, and so may constitute a considerable influence on the pattern of research.

From the above outline of research procedure it may be more meaningful to think of research as comprising of elements rather than stages. 'Stages' imply a certain chronological ordering of the research procedure which in reality is not present. Research is not like a train of coaches each duly following and linked to the one in front; at the extreme it can be more like a mixed salad which varies according to the time of year, the time of day or merely to whim or fancy. The elements comprising the research procedure can appear in any order and may be chopped up so that no one element remains whole - pieces may be scattered throughout the duration of the project.

Each stage of research identified in this report must be considered to be composed of numerous complex elements which are constantly changing according to the personal preferences of the researcher. Like any creative process, research is highly individualized, and this causes the work to be organized in a variety of ways. Granting bodies usually require a programme to be outlined, often in considerable detail, with time periods attached to each stage. The programme can only give a general framework for the research, for elements which could not have been detected when planning the programme may open up new channels for research. Just as a novelist finds his characters once created, make the story take a different direction from the one originally planned, so a researcher may find the project taking and imposing its own directions. A researcher may report back to his granting body that he wishes to change or give more emphasis to particular areas of his research programme. The granting body exerts considerable influence on the research procedures; it may wish the research to proceed along particular channels and the researcher may have to ensure he fulfils these demands despite the challenge of new areas of research which he may wish to pursue. When the research programme gets off the ground it tends to channel itself

along lines that could not be predetermined at the onset; research by its very nature imposes its own directions. Because of this, accurate and precise planning is impossible. It follows that information needs cannot be fully determined in advance.

5.2 Models of social science research procedure

A model of research procedure which springs most readily to mind is a linear one (see diagram 1). According to this, research proceeds by a number of orderly steps. However, in reality this does not happen, as has already been shown. The main justification for this model is that it acts as a means of clarifying the procedures involved in research, but it gives no indication of the relationship between the particular elements that comprise each stage.

A second model might be cyclic (see diagram 2). This illustrates the interaction of elements and the way in which each major stage of the research procedure may be cyclic in nature. For example, to achieve a satisfactory survey design it is usually necessary to draft out a design, test it, and subsequently redesign it. Similarly in the writing up stage, preliminary drafts of the report may be circulated to colleagues for criticism, as a result of which the draft is consequently rewritten; this cycle may occur several times before the final version is produced. The whole research procedure may be considered cyclic, with many minor cycles operating between two or more stages, resulting in a general circular movement of all elements. Discussion and literature are elements that may interact and influence the research procedure in any stage of the cycle.

Diagram 3 combines the characterists of both the linear and cyclic models. It aims to show some of the possible relationships, but of course it still cannot represent the complexity and all the permutations of the research procedure in reality.

6. CONCLUSION

The research process is extremely complex; only broad stages and

elements can be identified. The chronological order of each stage and the tasks that make up each stage cannot be predetermined, for they vary with the individual researcher's preference for organizing his work. Research is a process that does not allow for too formal organization: some researchers prefer to work alone, some in constant contact with others, some fit in their research between teaching or business commitments, and others may work constantly for several weeks or months and then break off for a while and turn their attention to other matters. Serendipity plays an important role in research, and information that a researcher comes across merely by chance may cause him to channel his work along new lines.

From analysis of Q.9 it was apparent that researchers themselves are often hazy about the way they go about their work. Many merely stated that they 'investigated' problem areas, 'collected' information or 'tested' hypotheses, giving no indication of how they actually carried out these processes. Trial and error may be an important factor in carrying out these processes, but only a few researchers actually mentioned this as an accepted part of their procedure. The main INFROSS survey showed that the information requirements of social science researchers are large and various; Q.9 has shown that they carry out their research in a rather haphazard, unstructured manner but usually the six main stages are included, in whatever order. This emphasizes the need for information systems designed for social scientists to allow for a large amount of flexibility, to meet their varying and largely unpredictable requirements. Those researchers who work in spasms or bursts may prefer information to be obtained at infrequent intervals, whereas those researchers who work at a fairly constant rhythm may prefer a constant flow of information. Those researchers who prefer to conduct a thorough literature search as a first stage in their research must be accommodated by the same overall system that allows others to consult the literature throughout their research.

It is hoped that this report has helped to throw light on how researchers in the social sciences actually carry out their work. Research by its very nature implies a certain spontaneity of direction and procedure. Although information requirements for research cannot be accurately defined at the beginning of a project efforts should be directed to ensure that when new areas or channels of a research project come into play, they do so with minimum disruption of ongoing procedures.

DIAGRAM 1

SOCIAL SCIENCE RESEARCH PROCEDURE: A LINEAR MODEL

Stage 1

- Generation of idea
- General formulation of project
- Preliminary work
  Reading, discussion, exploration of grant possibilities, consideration of possible methodologies
- Detailed hypothesis formulation, general decision on methodology
- Application for grant, obtaining of resources, clerical help, etc.

Formal initiation

Stage 2

- Refinement of hypothesis
- Detailed work on methodology
  Reading, discussion, acquisition of special knowledge or access to special expertise
- Detailed planning of data collection
  Sampling frame, contacting people needed to co-operate, design questionnaire, etc. Ensuring resources for data analysis
- Test of methodology
  Pilot survey, etc.

Stage 3

- Data collection

Stage 4

- Planning of data analysis
  Computer facilities, statistical techniques, programming, etc.
- Data analysis

Stage 5

- Drafting of report
  Discussion with colleagues, etc.
- Writing up of report (depends on purpose and sponsor)
- Further writing up (e.g. as periodical article)

Presentation at meetings and conferences may be made at <u>any</u> stage.

The procedure must vary according to whether external support is given or not, since this imposes time limits (and hence a general time table) and various other constraints.

At any stage, there may be feedback to an earlier, or throw-forward to a later stage, e.g. hypothesis may be reformulated, ideas picked up early on may suggest methods of data analysis, etc.

DIAGRAM 2

SOCIAL SCIENCE RESEARCH PROCEDURE: A CYCLIC MODEL

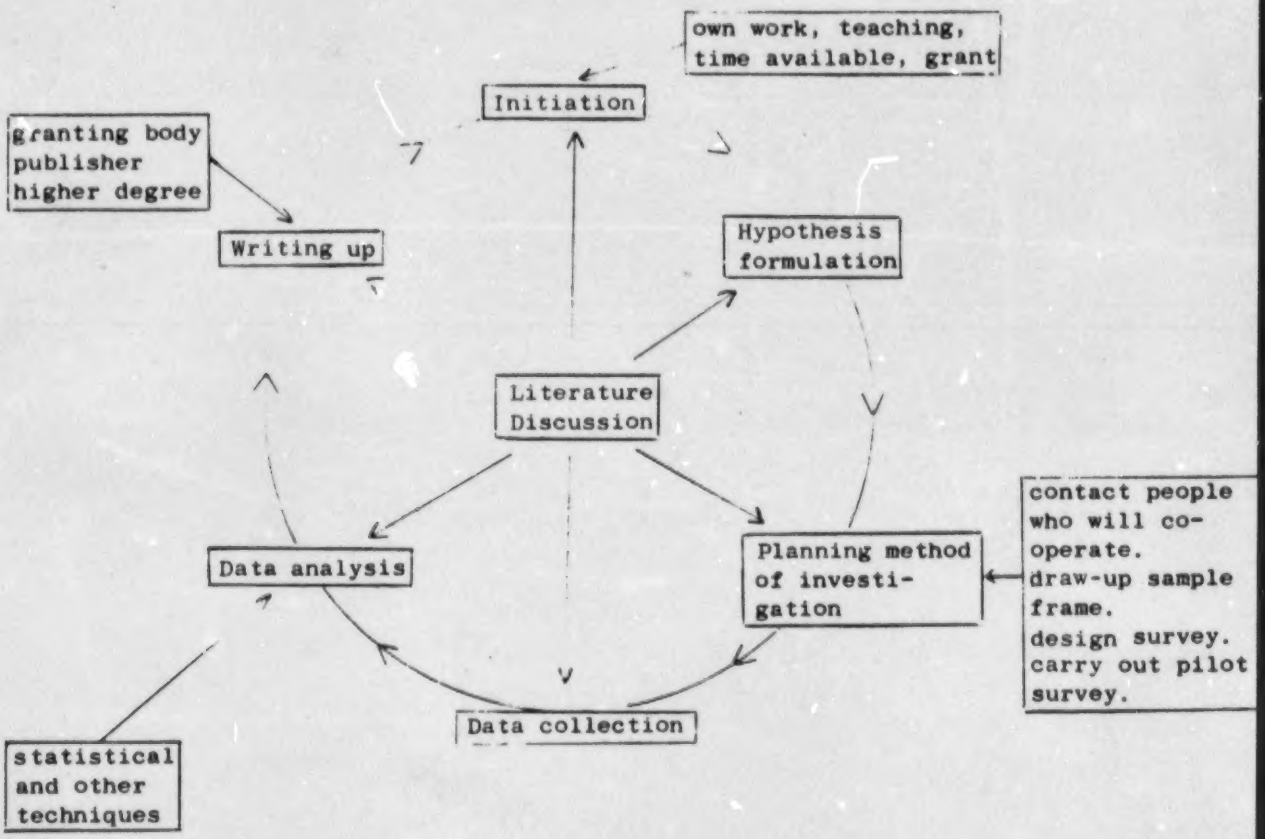
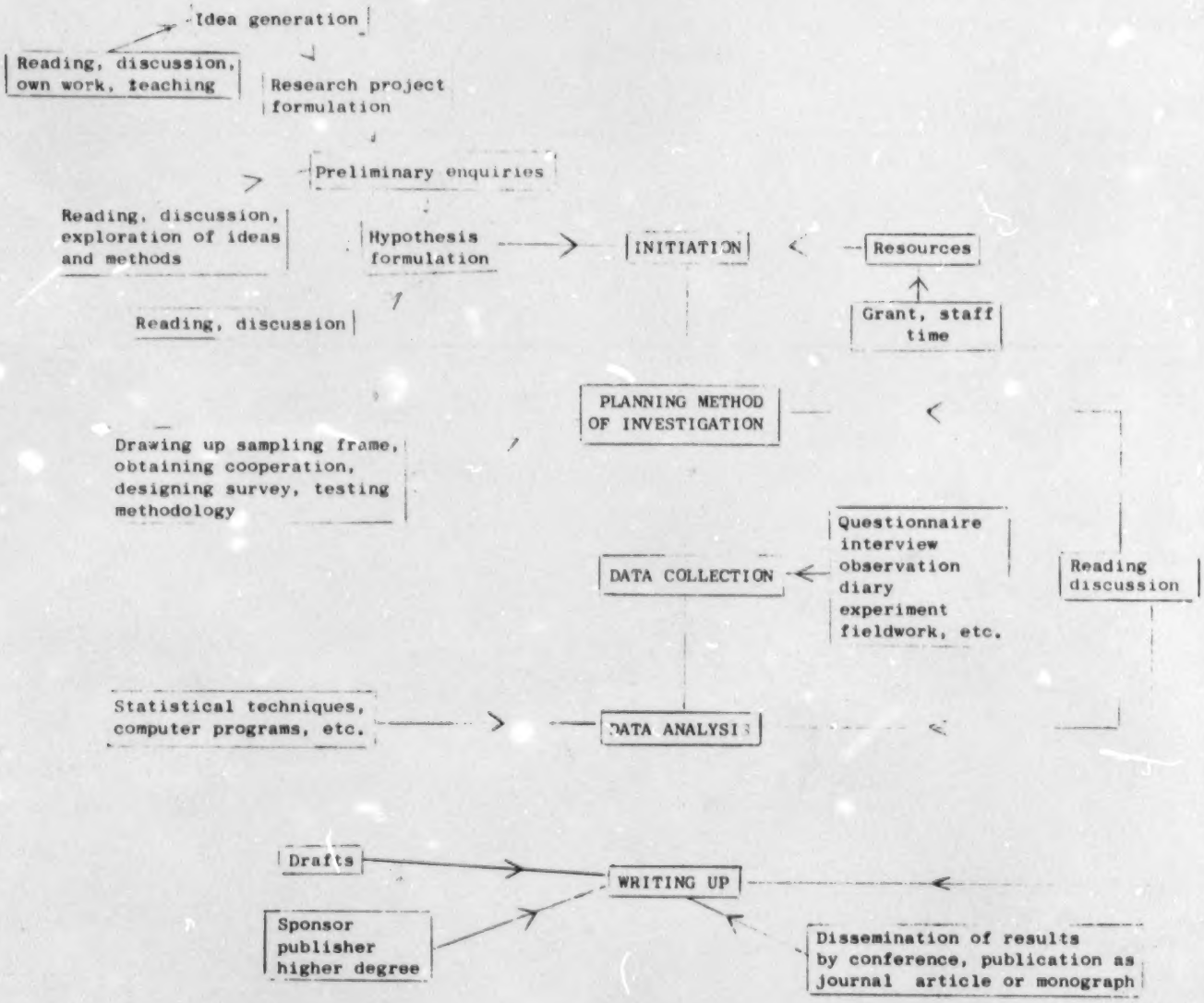


DIAGRAM 3

SOCIAL SCIENCE RESEARCH PROCEDURE: A GENERALIZED MODEL



REFERENCES

BATH UNIVERSITY LIBRARY. Investigation into information requirements of the social sciences. Research report no. 1: Information requirements of researchers in the social sciences. June 1971.

BATH UNIVERSITY LIBRARY. Investigation into information requirements of the social sciences. Research report no. 2: Information requirements of social scientists in government departments. March 1971.

BATH UNIVERSITY LIBRARY. Investigation into information requirements of the social sciences. Research report no. 3: Information requirements of college of education lecturers and schoolteachers. February 1971.

BATH UNIVERSITY LIBRARY. Investigation into information requirements of the social sciences. Research report no. 4: The information needs of social workers. February 1971.